

Remarks

Claims 1-5, 8-20, and 23-30 are pending. Claims 1-5, 8-20, and 23-30 stand rejected. The Applicant has amended claims 1, 3, 17, and 29 and has cancelled claims 2, 5, 15-16, and 19. The Applicants has amended portions of the specification and has included replacement sheet FIG. 1 to indicate the additional conductive plate limitation recited in the amended claims. The Applicant traverses the rejection herein.

35 U.S.C. § 103 Rejection

The Examiner rejected claims 1-5, 8-20, and 23-30 under 35 U.S.C. § 103(a) as being obvious in view of various combination of U.S. Patent No. 6,048,050 (Gundlach), U.S. Patent Publication No. 2002/0126167 (Kimura), U.S. Patent No. 6,312,110 (Darty), U.S. Patent No. 6,695,439 (Takahashi), U.S. Patent No. 6,932,458 (Howkins), U.S. Patent No. 5,227,814 (Mutou), and U.S. Patent No. 6,224,193 (Minemoto). The Applicant submits that the amended claims are non-obvious in view of the cited art.

Amended claim 1 in the pending application, paraphrased herein, recites an apparatus for electrorheological printing. The apparatus comprises a pressurized ink chamber containing electrorheological ink and a nozzle. The nozzle further includes circular electrodes at each end of the nozzle for controlling the discharge of the ink. The apparatus further includes a stimulator configured to increase the pressure of the ink within the ink chamber. When the ink chamber is pressurized by the stimulator, an electric field created within the nozzle will either allow or prevent the discharge of the ink based upon the magnitude of the electric field created. A pair of conductive plates aligned in parallel with the ejected path of the electrorheological ink from an outlet of the nozzle allows the modification of the ink path after ejection from the nozzle.

In rejecting claim 1, the Examiner has suggested that the combination of Gundlach and Kimura teaches all the limitations of claim 1. The Applicant respectfully disagrees. Gundlach teaches an acoustic droplet ejector using electrorheological ink. In Gundlach, a radio frequency source and an acoustic transducer generate a burst of acoustic energy which causes the discharge of ink from a free surface of the droplet ejector (Column 3, lines 30-40). Gundlach also teaches that in order to inhibit droplet ejection, an electric field is formed across the opening of the droplet ejector to increase the viscosity of the ink and prevent ejection (Column 3, lines 41-50).

Kimura teaches a pressurized non-rheological ink within a chamber. The chamber in

Kimura also includes a nozzle and a stimulator for increasing the pressure within the ink chamber. When the stimulator is activated, increased pressure within the ink chamber causes droplets of ink to be ejected from the nozzle. Because the ink in Kimura is not rheological ink, it is not possible to modify the viscosity of the ink or the path of the ink after it has been ejected from the nozzle. The Applicant submits that amended claim 1, which recites an additional limitation of "a pair of conductive plates aligned in parallel with a path of the electrorheological ink from the outlet of the nozzle to modify the path of the electrorheological ink from the outlet of the nozzle" is neither taught nor suggested in Gundlach nor in any other cited art of record, and therefore claim 1 is non-obvious. Support for amended claim 1 can be found within paragraph 45 of the application as published. Dependent claims 3, 4, and 8-14 are non obvious for at least depending on allowable base claim 1. Independent claims 17 and 29, which recite analogous features of claim 1 in computer storage medium form and in method form, are non-obvious for at least the same reasons as provided for claim 1. Dependent claims 18, 20, and 23-28 are non-obvious for at least the same reasons as provided for dependent claims 3, 4, and 8-14.

Conclusion

The Applicant submits that claims 1, 3-4, 8-14, 17-18, 20, and 23-29 are non-obvious in view of the cited art, and therefore respectfully requests the Examiner allow claims 1, 3-4, 8-14, 17-18, 20, and 23-29.

Respectfully submitted,

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